

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A corrosion inhibiting coating composition comprising:
at least about 1 wt% of a rare-earth praseodymium compound; and
a binder.
2. (Currently Amended) The composition of claim 1 ~~wherein the~~ further comprising a rare
earth compound ~~[[is]]~~ selected from the group consisting of rare earth oxides, mixed oxides,
solid solution oxides, hydroxides, hydrated oxides, salts, triflates, complexes and combinations
thereof.
3. (Currently Amended) The composition of claim 2 wherein the rare earth compound is an
anhydrous or hydrated oxide.
4. (Currently Amended) The composition of claim ~~[[1]]~~ 2 wherein the rare earth compound
comprises one or more metal cations selected from the group consisting of praseodymium,
terbium, cerium, samarium, ytterbium, yttrium, neodymium and combinations thereof.
5. (Currently Amended) The composition of claim ~~[[1]]~~ 2 wherein the rare earth compound
is selected from the group consisting of cerium oxide, cerium hydroxide, cerium solid solution
mixed oxide, cerium oxide mixture, cerium salt, neodymium oxide, neodymium hydroxide,
neodymium solid solution mixed oxide, neodymium oxide mixture, neodymium salt,
praseodymium oxide, praseodymium hydroxide, praseodymium solid solution mixed oxide,
praseodymium oxide mixture, praseodymium salt, ytterbium oxide, ytterbium hydroxide,
ytterbium solid solution mixed oxide, ytterbium oxide mixture, ytterbium salt, yttrium oxide,
yttrium hydroxide, yttrium solid solution mixed oxide, yttrium oxide mixture, yttrium salt,

terbium oxide, terbium hydroxide, terbium solid solution mixed oxide, terbium oxide ~~mixture~~
mixture, terbium salt, and combinations thereof.

6. (Currently Amended) The composition of claim ~~[[1]]~~ 2 wherein the rare earth compound is a praseodymium compound.
7. (Currently Amended) The composition of claim ~~[[6]]~~ 1 wherein the praseodymium compound is selected from the group consisting of praseodymium(III), praseodymium(III/IV), praseodymium(IV) compounds and mixtures thereof.
8. (Currently Amended) The composition of claim ~~[[6]]~~ 1 wherein the praseodymium compound is a praseodymium(III) compound.
9. (Currently Amended) The composition of claim 8 wherein the praseodymium(III) compound is a praseodymium(III) oxide.~~[[.]]~~
10. (Currently Amended) The composition of claim ~~[[6]]~~ 1 wherein the praseodymium compound is a praseodymium(III/IV) compound.
11. (Previously Presented) The composition of claim 10 wherein the praseodymium(III/IV) compound is a praseodymium(III/IV) oxide.
12. (Currently Amended) The composition of claim ~~[[6]]~~ 1 wherein the praseodymium compound is a praseodymium(IV) compound.
13. (Currently Amended) The composition of claim 1 comprising at least about 0.1 to about 90 3 wt% Pr_6O_{11} of the praseodymium compound.

14. (Currently Amended) The composition of claim 1 comprising at least about 0.1 to about 28 wt% Pr_6O_{11} of the praseodymium compound.
15. (Previously Presented) The composition of claim 1 further comprising one or more neutral to slightly acidic generating extenders or one or more acidic generating extenders.
16. (Previously Presented) The composition of claim 15 wherein the one or more neutral to slightly acidic generating extenders or one or more acidic generating extenders is a sulfur, phosphorus or silicon oxyanion-containing salt.
17. (Original) The composition of claim 1 wherein the composition is selected from the group consisting of aqueous, solvent-based, and powder coating compositions.
18. (Previously Presented) The composition of claim 1 wherein the composition is an aqueous composition.
19. (Currently Amended) The composition of claim ~~[[2]]~~ 1 wherein the binder is an organic polymer selected from the group consisting of epoxy, urethane, urea, acrylate, alkyd, melamine, polyester, vinyl, vinyl ester, organo-silicone, organo-siloxane, organo-silicate, organo-sulfide, organo-sulfone, epoxy novolac, epoxy phenolic, amides, drying oils, and hydrocarbon polymers.
20. (Currently Amended) The composition of claim ~~[[2]]~~ 1 wherein the binder is an epoxy polymer.
21. (Currently Amended) The composition of claim ~~[[2]]~~ 1 in combination with a material selected from the group consisting of linear and cyclic dextrans, triflic acid, triflates, acetates, talc, kaolin, organic-based ion exchange resins, and combinations thereof.

22. (Original) The composition of claim 21 comprising about 0.03 to about 5 wt% cyclodextrin, about 0.1 to about 0.5 wt% triflic acid, or about 0.1 to about 5 wt% ionic exchange resin.
23. (Currently Amended) The composition of claim [[2]] 1 further comprising a material selected from the group consisting of gelatin and gelatin derivatives.
24. (Original) The composition of claim 23 comprising about 0.03 to about 5 wt% gelatin.
25. (Currently Amended) The composition of claim [[2]] 1 further comprising a material selected from the group consisting of amino acids, amino acid derivatives and combinations thereof.
26. (Original) The composition of claim 25 wherein the amino acid is selected from the group consisting of glycine, arginine, and methionine.
27. (Original) The composition of claim 25 wherein the amino acid derivative is methionine sulfoxide or methionine methyl sulfoxide.
28. (Original) The composition of claim 22 comprising about 0.1 to about 5 wt% amino acid.
29. (Currently Amended) The composition of claim [[1]] 2 wherein the rare earth compound is a rare earth carbonate or a rare earth triflate.
30. (Currently Amended) The composition of claim [[2]] 1 further comprising a coloring pigment.
31. (Original) The composition of claim 30 wherein the coloring pigment is TiO₂.

32. (Original) A substrate coated with the composition of claim 1.
33. (Original) The substrate of claim 32 wherein the substrate is selected from the group consisting of aluminum, aluminum alloys, steel, galvanized steel, zinc, zinc alloys, magnesium, and magnesium alloys.
34. (Previously Presented) The substrate of claim 32 wherein the substrate is aluminum.
35. (Original) A corrosion inhibiting composition comprising:
a rare earth compound;
a binder; and
a neutral to slightly acidic generating extender or an acidic generating extender.
36. (Previously Presented) The composition of claim 35 wherein the neutral to slightly acidic generating extender or the acidic generating extender is a sulfur, phosphorus or silicon oxyanion-containing salt.
37. (Original) The composition of claim 35 wherein the neutral to slightly acidic generating extender or the acidic generating extender is an anhydrous or hydrous lanthanide sulfate.
38. (Previously Presented) The composition of claim 138 wherein the metal sulfate is selected from the group consisting of anhydrous magnesium sulfate, hydrous magnesium sulfate, anhydrous calcium sulfate, hydrous calcium sulfate, barium sulfate, samarium sulfate, and strontium sulfate.
39. (Previously Presented) The composition of claim 138 wherein the metal sulfate is hydrous calcium sulfate, anhydrous calcium sulfate or strontium sulfate.

40. (Original) The composition of claim 38 comprising about 1 to about 99 wt% metal sulfate.
41. (Original) The composition of claim 38 comprising about 45 to about 75 wt% metal sulfate.
42. (Previously Presented) The composition of claim 36 wherein the rare earth compound is selected from the group consisting of rare earth oxides, hydroxides, mixed oxides, solid solution oxides, hydrated oxides, salts, triflates, complexes, and combinations thereof.
43. (Original) The composition of claim 36 wherein the rare earth compound comprises one or more metal cations selected from the group consisting of praseodymium, terbium, cerium, samarium, ytterbium, yttrium, neodymium and combinations thereof.
44. (Original) The composition of claim 36 wherein the rare earth compound is a praseodymium compound.
45. (Original) The composition of claim 44 wherein the praseodymium compound is selected from the group consisting of praseodymium(III), praseodymium(III/IV), praseodymium(IV) compounds and combinations thereof.
46. (Original) The composition of claim 44 wherein the praseodymium compound is a praseodymium(III) compound.
47. (Original) The coating composition of claim 44 wherein the praseodymium compound is a praseodymium(III) sulfate or a praseodymium(III/IV) oxide.
48. (Original) The composition of claim 44 wherein the praseodymium compound is a praseodymium(III/IV) compound.

49. (Original) The composition of claim 44 wherein the praseodymium compound is a praseodymium(IV) compound.
50. (Original) The composition of claim 43 wherein the composition is selected from the group consisting of aqueous, solvent-based, and powder coating compositions.
51. (Currently Amended) The composition of claim 43 wherein the binder is an organic polymer selected from the group consisting of epoxy, urethane, urea, acrylate, alkyd, melamine, polyester, vinyl, vinyl ester, organo-silicone, organo-siloxane, organo-silicate, organo-sulfide, organo-sulfone, polysulfide, epoxy novolac, epoxy phenolic, amides, drying oils, and hydrocarbon polymers.
52. (Previously Presented) The composition of claim 43 wherein the binder is an epoxy polymer.
53. (Original) The composition of claim 43 wherein the binder is an inorganic polymer selected from the group consisting of silicone, siloxane and silicate polymers.
54. (Original) The composition of claim 43 further comprising a coloring pigment.
55. (Original) The composition of claim 54 wherein the coloring pigment is TiO_2 .
56. (Currently Amended) A corrosion inhibiting primer composition comprising:
at least about 1 wt% of a praseodymium (III/IV) mixed oxide; and
a binder.
57. (Original) The composition of claim 56 wherein the composition is selected from the group consisting of aqueous, solvent-based, and powder coating compositions.

58. (Currently Amended) The composition of claim 56 wherein the binder is an organic polymer selected from the group consisting of epoxy, urethane, urea, acrylate, alkyd, melamine, polyester, vinyl, vinyl ester, organo-silicone, organo-siloxane, organo-silicate, organo-sulfide, organo-sulfone, polysulfide, epoxy novolac, epoxy phenolic, amides, drying oils, and hydrocarbon polymers.

59. (Previously Presented) The composition of claim 56 wherein the binder is an epoxy polymer.

60. (Original) The composition of claim 56 wherein the binder is an inorganic polymer selected from the group consisting of silicone, siloxane and silicate polymers.

61. (Original) The composition of claim 56 further comprising a coloring pigment.

62. (Currently Amended) The composition of claim 61 wherein the coloring pigment is TiO_2 .

63-66. (Canceled)

67. (Currently Amended) A corrosion inhibiting coating composition comprising:
a binder; [[and]]
one or more rare earth element oxides selected from the group consisting of oxides, mixed oxides, solid solution oxides, hydrated oxides and hydroxides; and
a praseodymium oxide selected from the group consisting of oxides, mixed oxides, solid solution oxides, hydrated oxides and hydroxides, wherein the praseodymium oxide is present in an amount of at least about 1 wt%.

68. (Currently Amended) The composition of claim ~~[[139]]~~ 67 wherein the ~~rare-earth~~ praseodymium oxide is selected from the group consisting of PrO_2 , Pr_2O_3 , and Pr_6O_{11} .
69. (Original) The composition of claim 67 further comprising a neutral to slightly acidic generating extender or an acidic generating extender.
70. (Currently Amended) A corrosion inhibiting coating composition having a local pH or ionic activity comprising:
- a binder;
 - one or more rare earth element oxides selected from the group consisting of oxides, mixed oxides, solid solution oxides, hydrated oxides, and hydroxides, ~~wherein at least one of the one or more rare earth element oxides is an anhydrous praseodymium oxide;~~ and
 - ~~a metal sulfate.~~
 - a neutral to slightly acidic generating extender or an acidic generating extender.
- 71-98. (Canceled)
99. (Previously Presented) A coating system comprising:
- a coating containing an effective corrosion-inhibiting amount of one or more rare earth compounds, one or more neutral to slightly acidic generating extenders or one or more acidic generating extenders applied to a substrate.
100. (Original) The coating system of claim 99 further comprising one or more pretreatment coatings applied to the substrate to form a pretreated substrate and a topcoat.
101. (Original) The coating system of claim 100 wherein the topcoat is a urethane topcoat.
102. (Original) The coating system of claim 99 wherein the coating system is a resin system.

103. (Original) The coating system of claim 99 wherein the coating system is selected from the group consisting of a UV-coating system, electrolytic coating system, appliqué, powder coating system, and microwave coating system.
104. (Original) The coating system of claim 99 wherein the substrate is coated by a method selected from the group consisting of spraying, brushing, rolling and dipping.
105. (Original) The coating system of claim 99 wherein the substrate is a composite substrate.
106. (Original) The coating system of claim 99 wherein the substrate is selected from the group consisting of aluminum, aluminum alloys, steel, galvanized steel, zinc, zinc alloys, magnesium, and magnesium alloys.
107. (Original) A coating system comprising:
one or more pretreatment coatings applied to a substrate to form a pretreated substrate;
and
a coating containing an effective corrosion-inhibiting amount of a corrosion-inhibiting carbon pigment combined with a neutral to slightly acidic generating extender or an acidic generating extender, the coating applied to the pretreated substrate.
108. (Original) The coating system of claim 107 further including a urethane topcoat.
109. (Original) The coating system of claim 106 wherein the coating system is selected from the group consisting of a UV-coating system, electrolytic coating system, appliqué, powder coating system, and microwave coating system.
110. (Currently Amended) The coating system of ~~claim 106~~ claim 106 wherein the pretreated substrate is coated by a method selected from the group consisting of spraying, brushing, rolling and dipping.

111. (Original) A coating system comprising:
One or more pretreatment coatings applied to a substrate to form a pretreated substrate;
and
a coating containing an effective corrosion-inhibiting amount of one or more rare earth compounds, one or more neutral to slightly acidic generating extenders or one or more acidic generating extenders; and
at least one or more other components, the coating applied to the pretreated substrate.
112. (Original) The coating system of claim 111 further including a urethane topcoat.
113. (Original) The coating system of claim 111 wherein the coating system is a resin system.
114. (Original) The coating system of claim 111 wherein the coating system is selected from the group consisting of a UV-coating system, electrolytic coating system, appliqué, powder coating system, and microwave coating system.
115. (Previously Presented) The coating system of claim 111 wherein the pretreated substrate is coated by a method selected from the group consisting of spraying, brushing, rolling and dipping.
116. (Original) The coating system of claim 111 wherein the pretreated substrate is a composite substrate.
117. (Previously Presented) A method for coating a substrate with a composition comprising treating the substrate with the composition of claim 1, and curing the applied composition.
118. (Original) A method for coating a substrate comprising treating the substrate with a conversion coating, applying the composition of claim 1, and curing the applied composition.

119. (Original) The method of claim 118 wherein the conversion coating is selected from the group consisting of cerium conversion coatings, praseodymium conversion coatings, phosphate conversion coatings, zinc-type conversion coatings, and chromium conversion coatings and anodized-type coatings.
120. (Previously Presented) The method of claim 118 wherein the conversion coating is a chromium conversion coating.
121. (Currently Amended) A method for preparing a coating composition comprising:
preparing a paint formulation; and
adding an effective corrosion-inhibiting amount of a rare earth compound and at least one of[[,]] a neutral to slightly acidic generating extender or an acidic generating extender to the paint formulation to produce a coating composition.
122. (Currently Amended) The method of claim 121 further comprising pre-dispersing the rare earth compound, ~~the neutral to slightly acidic generating extender or acidic generating extender~~ with a dispersant.
123. (Original) A method comprising:
providing a substrate to be coated; and
coating the substrate with a coating composition having an effective corrosion-inhibiting amount of a rare earth compound, a neutral to slightly acidic generating extender or an acidic generating extender.
124. (Original) The method of claim 123 wherein the substrate is a pretreated substrate.
125. (Original) The method of claim 124 wherein the pretreated substrate is coated by a method selected from the group consisting of spraying, brushing, rolling and dipping.

126. (Original) The method of claim 123 further comprising applying a topcoat.
127. (Previously Presented) The composition of claim 15 wherein at least one of the one or more neutral to slightly acidic generating extenders or one or more acidic generating extenders is a sulfur, phosphorus or silicon oxyanion-containing salt.
128. (Previously Presented) The composition of claim 15 wherein at least one of the one or more neutral to slightly acidic generating extenders or one or more acidic generating extenders is a sulfate.
129. (Previously Presented) The composition of claim 128 wherein the sulfate is a metal sulfate.
130. (Previously Presented) The composition of claim 129 wherein the metal sulfate is selected from the group consisting of calcium sulfate, strontium sulfate, magnesium sulfate, barium sulfate and combinations thereof.
131. (Previously Presented) The composition of claim 15 wherein at least one of the one or more neutral to slightly acidic generating extenders or one or more acidic generating extenders is a phosphate.
132. (Previously Presented) The composition of claim 44 wherein the praseodymium compound is a praseodymium(III) sulfate or a praseodymium(III/IV) oxide.
133. (Previously Presented) The composition of claim 66 wherein the extender is substantially soluble.
- 134-135. (Canceled)

136. (Original) The coating system of claim 106 wherein the coating system is a resin system.
137. (Previously Presented) The composition of claim 128 wherein the sulfate is a praseodymium sulfate.
138. (Previously Presented) The composition of claim 35 wherein the neutral to slightly acidic generating extender or an acidic generating extender is a metal sulfate.
139. (Currently Amended) The composition of claim ~~[[63]]~~ 67 wherein at least one of the one or more rare earth element oxides is a rare earth praseodymium oxide or a rare earth terbium oxide.
140. (Currently Amended) The substrate of claim 85 wherein the composite is a carbon fiber ~~composite~~ composite.
141. (New) The composition of claim 1 comprising up to about 40 wt% of the praseodymium compound.
142. (New) The composition of claim 1 wherein the praseodymium compound is a praseodymium oxide, a praseodymium mixed oxide or a combination thereof.
143. (New) The composition of claim 142 wherein the praseodymium (III/IV) mixed oxide is Pr_6O_{11} .
144. (New) The composition of claim 143 wherein the Pr_6O_{11} is present in amounts of at least about 3 wt%.

145. (New) The composition of claim 143 wherein the Pr_6O_{11} is present in amounts of at least about 28 wt%.
146. (New) The composition of claim 143 wherein the Pr_6O_{11} is present in amounts of at least about 40 wt%.
147. (New) The composition of claim 38 wherein the rare earth compound is an oxide, mixed oxide or combination thereof.
148. (New) The composition of claim 147 further comprising a second rare earth compound selected from the group consisting of rare earth oxides, mixed oxides, solid solution oxides, hydroxides, hydrated oxides, salts, triflates, complexes and combinations thereof.
149. (New) The composition of claim 56 further comprising a rare earth compound selected from the group consisting of rare earth oxides, mixed oxides, solid solution oxides, hydroxides, hydrated oxides, salts, triflates, complexes and combinations thereof.
150. (New) The composition of claim 67 wherein at least one of the one or more rare earth element oxides is selected from the group consisting of Y_2O_3 , La_2O_3 , CeO_2 , $\text{Pr}(\text{OH})_3$, PrO_2 , Pr_2O_3 , Pr_6O_{11} , Nd_2O_3 , Sm_2O_3 , Tb_4O_7 , and Yb_2O_3 .
151. (New) The composition of claim 70 wherein at least one of the one or more rare earth element oxides is an anhydrous praseodymium oxide.
152. (New) The composition of claim 70 wherein the to slightly acidic generating extender or an acidic generating extender is a metal sulfate.
153. (New) The composition of claim 152 wherein the metal sulfate is selected from the group consisting of anhydrous magnesium sulfate, hydrous magnesium sulfate, anhydrous

calcium sulfate, hydrous calcium sulfate, barium sulfate, samarium sulfate, strontium sulfate, and combinations thereof.

154. (New) A corrosion inhibiting primer composition comprising:

a rare earth triflate or a rare earth carbonate; and
a binder.

155. (New) The composition of claim 154 wherein the rare earth triflate or rare earth carbonate comprises one or more metal cations selected from the group consisting of praseodymium, terbium, cerium, samarium, ytterbium, yttrium, neodymium and combinations thereof.

156. (New) The composition of claim 154 wherein the rare earth triflate is a praseodymium triflate or a terbium triflate and the rare earth carbonate is a praseodymium triflate or a terbium triflate.

157. (New) The coating composition of claim 154 further comprising one or more metal cations selected from the group consisting of Group 1A, Group 2A, Group 3A, and Group 3B metals.

158. (New) The coating composition of claim 154 further comprising one or more anions selected from the group consisting of acetate, borate, carbonate, nitrate, phosphate, phosphonate, sulfate, triflate, and EDTA.

159. (New) The composition of claim 154 further comprising a second rare earth compound selected from the group consisting of rare earth oxides, mixed oxides, solid solution oxides, hydroxides, hydrated oxides, salts, triflates, complexes and combinations thereof.

160. (New) The method of claim 121 wherein the rare earth compound is a praseodymium oxide or praseodymium mixed oxide.
161. (New) The method of claim 160 wherein the praseodymium mixed oxide is Pr_6O_{11} .
162. (New) The method of claim 121 further comprising adding a material selected from the group consisting of amino acids, derivatives of amino acids, and combinations thereof to the paint formulation.
163. (New) The method of claim 121 further comprising adding a material selected from the group consisting of gelatin, gelatin derivatives, and combinations thereof to the paint formulation.
164. (New) A method for preparing a coating composition comprising:
preparing a paint formulation; and
adding an effective corrosion-inhibiting amount of at least about 1 weight percent of a praseodymium oxide or a praseodymium mixed oxide to the paint formulation to produce a coating composition.
165. (New) The method of claim 164 wherein the praseodymium mixed oxide is Pr_6O_{11} .
166. (New) The method of claim 164 further comprising adding a rare earth compound selected from the group consisting of rare earth oxides, mixed oxides, solid solution oxides, hydroxides, hydrated oxides, salts, triflates, complexes and combinations thereof to the paint formulation.
167. (New) The method of claim 164 further comprising adding a neutral to slightly acidic generating extender or an acidic generating extender to the paint formulation.

168. (New) The method of claim 164 further comprising pre-dispersing the at least about 1 weight percent of the praseodymium oxide or praseodymium mixed oxide with a dispersant.
169. (New) A substrate coated with the composition of claim 35.
170. (New) The substrate of claim 169 wherein the substrate is selected from the group consisting of aluminum, aluminum alloys, steel, galvanized steel, zinc, zinc alloys, magnesium, magnesium alloys and composites.
171. (New) The substrate of claim 169 wherein the substrate is aluminum.
172. (New) A substrate coated with the composition of claim 56.
173. (New) The substrate of claim 172 wherein the substrate is selected from the group consisting of aluminum, aluminum alloys, steel, galvanized steel, zinc, zinc alloys, magnesium, magnesium alloys and composites.
174. (New) The substrate of claim 172 wherein the substrate is aluminum.
175. (New) A substrate coated with the composition of claim 67.
176. (New) The substrate of claim 175 wherein the substrate is selected from the group consisting of aluminum, aluminum alloys, steel, galvanized steel, zinc, zinc alloys, magnesium, magnesium alloys and composites.
177. (New) The substrate of claim 175 wherein the substrate is aluminum.
178. (New) A substrate coated with the composition of claim 70.

179. (New) The substrate of claim 178 wherein the substrate is selected from the group consisting of aluminum, aluminum alloys, steel, galvanized steel, zinc, zinc alloys, magnesium, magnesium alloys and composites.

180. (New) The substrate of claim 178 wherein the substrate is aluminum.

181. (New) A substrate coated with the composition of claim 154.

182. (New) The substrate of claim 181 wherein the substrate is selected from the group consisting of aluminum, aluminum alloys, steel, galvanized steel, zinc, zinc alloys, magnesium, magnesium alloys and composites.

183. (New) The substrate of claim 181 wherein the substrate is aluminum.